

Appendix H

Section 4(f) Discussion

US 301 Project Development



***Federal Highway
Administration***



***Delaware Department
Of Transportation***

**US 301 Project Development
Section 4(f) Whitepaper:**

**Preliminary Analysis of Avoidance and Minimization Options for Known and Potential
Section 4(f) Properties**

Draft March 7, 2006

I. Introduction

Section 4(f) of the US Department of Transportation Act protects publicly owned public parks, recreation areas, and wildlife refuges, as well as significant public or private historic sites which may be affected by Federal transportation projects. In relation to historic sites, Section 4(f) requirements apply only to those listed in or eligible for the National Register of Historic Places (NRHP) unless the Federal Highway Administration (FHWA) determines that the application of Section 4(f) is otherwise appropriate (36 CFR § 771.135(e)).

The Secretary of the U.S. Department of Transportation (USDOT) may approve a transportation project that “uses” a Section 4(f) resource only if the Secretary makes the following findings:

- There is no feasible and prudent alternative to the use of land from the Section 4(f) resources, and
- The project includes all possible planning to minimize harm to the Section 4(f) resources resulting from the use. (49 U.S.C. § 303 (c))

If there is no prudent and feasible alternative that completely avoids Section 4(f) resources, the prudent and feasible alternative that causes the “least harm” to resources must be selected. If two or more alternatives cause substantially equal harm to Section 4(f) resources, regulations and guidance state that FHWA can choose freely among them.

FHWA regulations recognize three different types of Section 4(f) “use”:

- Direct use, when land is permanently incorporated into a transportation facility from within the boundaries of a Section 4(f) resource (NRHP boundaries, if the resource is a historic site) (23 CFR § 771.135(p)(1)(i));
- Constructive use, which involves no direct use but has proximity impacts so severe that the protected features, activities, or attributes of a Section 4(f) resource are substantially impaired (23 CFR § 771.135(p)(2)); and
- Temporary occupancy, that is adverse in terms of the statute’s preservation purposes ((23 CFR § 771.135(p)(1)(ii)).

This analysis focuses on the potential direct uses of Section 4(f) properties by the Alternatives Retained for Detailed Study – the No-Build Alternative and the Yellow, Purple+Spur, Brown and Green+Spur Build Alternatives. Potential constructive uses and temporary occupancy are not addressed because the nature of these potential uses is not known at this time. Potential constructive uses will be evaluated once the nature of the effects on historic properties under

Section 106 regulation and guidance is determined in consultation with the State Historic Preservation Officer (SHPO). Potential temporary occupancy will be evaluated once the Selected Alternative is identified and additional design details are developed for the Selected Alternative.

The recent USDOT re-authorization bill enacted by Congress in 2005 (SAFETEA-LU) also added a new consideration regarding Section 4(f). It created a shorter, simplified Section 4(f) process for projects that will have *de minimis* use of Section 4(f) resources. USDOT agencies may make *de minimis* findings by meeting the following criteria:

- For historic properties: If, through the consultation required by Section 106 of the National Historic Preservation Act, the agency has made a finding that the project will have *no adverse effect* on the historic property or that there will be *no historic properties affected* by the project
- For parks, recreation areas, and wildlife and waterfowl refuges: If, after public notice, review and comment, the agency has made a finding that the project will not adversely affect the activities, features, and attributes of the Section 4(f) resource, and that finding has been concurred with by the official with jurisdiction over the resource (119 STAT. 1875 §6009)

Current FHWA guidance, dated December 13, 2005, addresses the definition and application of *de minimis* for their programs and projects. In order to put the potential direct uses of historic properties in perspective for this analysis, the potential *de minimis* use of Section 4(f) resources is identified in this document. In accordance with FHWA guidance, the potential for a minor use of a historic property to be considered *de minimis* is identified in circumstances where it is possible that a direct impact could be considered *no adverse effect* under Section 106. It is important to note, however, that this possibility has been assessed through professional judgment but without consultation with the SHPO, because such consultation is premature in the Section 106 process.

A. Alternatives

The No-Build Alternative and four build alternatives are considered in the US 301 Project Development effort (see *Alternatives Retained for Detailed Evaluation*, RK&K, November 2005). All of the build alternatives provide a connection between US 301 at the Delaware/Maryland state line and SR 1 near the Biddles Toll Plaza on a combination of north-south (from the state line to north of Middletown) and east-west alignments (from north of Middletown to SR 1).

1. No-Build Alternative

The No-Build alternative would maintain the existing roadway network and would include routine maintenance projects and minor improvements as included in the current Capital Transportation Program (CTP) for FY 2005 – 2010.

2. *Yellow Alternative*

The Yellow Alternative would construct a new four-lane limited access highway along the existing alignment of US 301 from the Delaware/Maryland state line to Mount Pleasant and along the existing alignment of SR 896 (Boyd's Corner Road) from Mount Pleasant to SR 1, south of the Biddles Toll Plaza. Access would be provided at three locations: a split diamond interchange located west of Middletown near the state line, slip ramps to/from frontage roads from north of Middletown to Mount Pleasant, and north serving directional ramps at SR 1. An interchange would replace the existing intersection at US 301/SR 896/SR 15 south of the Summit Bridge.

3. *Purple+Spur Alignment*

The Purple+Spur Alternative would construct a new four-lane limited access highway west of existing US 301 and Middletown from the Delaware/Maryland state line to Armstrong Corner Road, on a new northeasterly alignment from Armstrong Corner Road to SR 896 (Boyd's Corner Road) near Jamison's Corner Road, and along the existing SR 896 (Boyd's Corner Road) alignment to SR 1, south of the Biddles Toll Plaza. Access would be provided in four locations: a diamond interchange located west of Middletown, a diamond interchange north of Middletown in the vicinity of Armstrong Corner Road, a diamond interchange at Jamison's Corner Road and north serving directional ramps at SR 1. A two-lane, limited access north-south spur roadway would continue on the ridge alignment from Armstrong Corner Road to the existing intersection of SR 896/SR 15/US 301 south of the C&D Canal, which would be converted to a diamond interchange.

4. *Brown Alternative*

The Brown Alternative would construct a new four-lane limited access highway on the ridge alignment, west of existing US 301 and Middletown, from the Delaware/Maryland state line to south of Old Summit Bridge Road and on a new east-west alignment, south of Lorewood Grove Road, from south of Old Summit Bridge Road to SR 1, north of the Biddles Toll Plaza.

Two Options have developed for the Brown Alternative. The North Option turns east-west, north of the Summit Bridge Farms development. The South Option turns east-west south of the Summit Bridge Farms development. Access would be provided in five locations for either option: a diamond interchange located west of Middletown, directional ramps at Summit Bridge Road, a diamond interchange with SR 896 east of Old Summit Bridge Road, a diamond interchange at Jamison's Corner Road and north serving directional ramps at SR 1.

5. *Green+Spur Alternative*

The Green+Spur Alternative would construct a new four-lane limited access highway on the ridge alignment, west of US 301 and Middletown, from the Delaware/Maryland state line to Armstrong Corner Road and on a new northeasterly alignment from Armstrong Corner Road to SR 1 north of the Biddles Toll Plaza. Access would be provided in four locations: a diamond interchange located west of Middletown, a diamond interchange north of Middletown in the

vicinity of Armstrong Corner Road, a diamond interchange at Jamisons Corner Road and north serving directional ramps at SR 1. A two-lane, limited access north-south spur roadway would continue on the ridge alignment from Armstrong Corner Road to the existing intersection of SR 896/SR 15/US 301, south of the C&D Canal, which would be converted to a diamond interchange.

Two Options have been developed for the Green+Spur Alternative northeast of Boyds Corner Road, in the vicinity of the proposed Whitehall and Bayberry developments. The North Option would, after crossing over SR 896 (Boyds Corner Road), continue in a northerly direction, turning easterly along the north edge of the proposed Scott Run Business Park (Whitehall). The South Option would continue in a more northeasterly direction, crossing generally between the proposed Scott Run Business Park (Whitehall) and the proposed Bayberry development.

II. Section 4(f) Resources

A. Section 4(f) Resources in the Project Area

There are two publicly-owned public parks and recreation areas located in the project area, which extends ½-mile on each side of each of the proposed alternative alignments. The first resource is Middletown Commons, a public park owned by the Town of Middletown. The second is the C&D Canal Wildlife & Recreation Area, which is a public recreation area and wildlife preserve, owned by the US Army Corps of Engineers and operated by the Corps with an agreement with the Delaware Department of Natural Resources and Environmental Control (DNREC). Direct impacts to these resources are not expected for any of the alternatives under consideration, and, therefore, they will not be discussed further in this document.

In addition to the publicly-owned parks and recreation areas, there are 30 known and potential historic resources within 600' of the Alternatives. Historic resources are listed in **Table 1**; those resources that are shaded are potentially directly used by the project and described in greater detail in **Section III**. These sites are listed in the National Register of Historic Places, have been determined eligible for listing or are currently under discussion regarding boundaries or eligibility with the SHPO.

Table 1 Historical Resources within 600' of the Alternatives

Name	CRS #	National Register Status	Within 600' of Alternative(s)	Direct Impact?
Forest Cemetery 2025 Cedar Lane Rd	A00019	Treat as if Eligible	Yellow	No
Ringold Chapel AME 5017 Summit Bridge Rd	A00031	To be Determined – Under Discussion	Yellow	Yes
Asbury Cemetery West side of DuPont Highway, north of Boyds Corner Rd	A00081	Treat as if Eligible	Yellow & Purple+Spur	No
Fertilizer Warehouse 225 W. Main St	A00094	Treat as contributing to Middletown Historic District	Yellow	No

Name	CRS #	National Register Status	Within 600' of Alternative(s)	Direct Impact?
Shahan Farm, Lanape Acres 389 Strawberry Lane	A00236	Eligible	Yellow, Purple+Spur, Brown, & Green+Spur	No
S. Holton Farm 2010 Choptank Rd	N00107	Listed	Purple+Spur, Brown, & Green+Spur	No
Summerton; John Cochran House 840 Middletown Warwick Rd	N00112	Eligible	Yellow	Yes
Rumsey Farm 841 Middletown Warwick Rd	N00113	Listed	Yellow, Purple+Spur, Brown, & Green+Spur	No
Cochran Grange; John P. Cochran House 704 Middletown Warwick Rd	N00117	Listed	Yellow	No
Hedgelawn; Kohl House; Wm R. Cochran House 772 Middletown Warwick Rd	N00118	Listed	Yellow	No
Weston; S. Brady Farm 4677 Summit Bridge Rd	N00121	Listed	Yellow, Purple+Spur, & Green+Spur	No
Achmester N Side of Marl Pit Rd, One Mile E of Summit Bridge Rd	N03930	Listed	Yellow, Purple+Spur, & Green+Spur	No
Idalia Manor; Mrs. M.A. Osborne 1870 S. DuPont Highway	N03947	Listed	Yellow, Purple+Spur, Brown, Green+Spur	No
Lovett Farm/Mrs. Templeman House 1405 Cedar Lane Rd	N05132	Eligible	Purple+Spur & Green+Spur	No
Armstrong-Walker House; J. Cox Estate 5036 Summit Bridge Rd	N05146	Listed	Yellow, Purple+Spur, & Green+Spur	<u>Yellow – Yes</u> Purple+Spur & Green+Spur – No
Rosedale; Mary Del Farm 1143 Bunker Hill Rd	N05148	Listed	Purple+Spur, Brown, & Green+Spur	No
R.G. Hayes House 5187 Summit Bridge Rd	N05153	Eligible	Yellow	Yes
J.M. Vandergrift House; Elm Grange 2424 S. DuPont Highway	N05181	Listed	Yellow & Purple+Spur	No
S.H. Rothwell House 551 Boyds Corner Rd	N05184	Eligible (Criterion D only)	Yellow & Green North+Spur	No
S. Rothwell House 669 Old Summit Bridge Rd	N05191	Eligible	Brown	No
J. Houston House 1000 Jamison Corner Rd	N05195	Eligible	Green South+Spur	No
Retirement Farm 2256 DuPont Hwy N	N05201	Listed	Yellow & Purple+Spur	No
C. Polk House Estate 929 Middletown Warwick Rd	N05221	Eligible	Yellow, Purple+Spur, Brown, & Green+Spur	No

Name	CRS #	National Register Status	Within 600' of Alternative(s)	Direct Impact?
B.F. Hanson House 1102 Middletown Warwick Rd	N05225	Listed	Yellow, Purple+Spur, Brown, & Green+Spur	No
Mt. Pleasant Farm 4564 Summit Bridge Rd	N05242	Eligible	Yellow	Yes
"Fairview"; A.H. Diehl House 350 Hyetts Corner Rd	N05244	Eligible	Yellow & Purple+Spur	No
S.F. Shallcross House 1049 Boyds Corner Rd	N05248	Eligible	Yellow & Purple+Spur	No
State Bridge Number 383 Jamison's Corner Rd	N12636	Eligible	Green South+Spur	No
Parkway Motel 2397 S. DuPont Hwy	N12742	Probably Not Eligible	Yellow & Purple+Spur	No

B. Section 4(f) Resources Potentially Impacted by One or More Alternatives

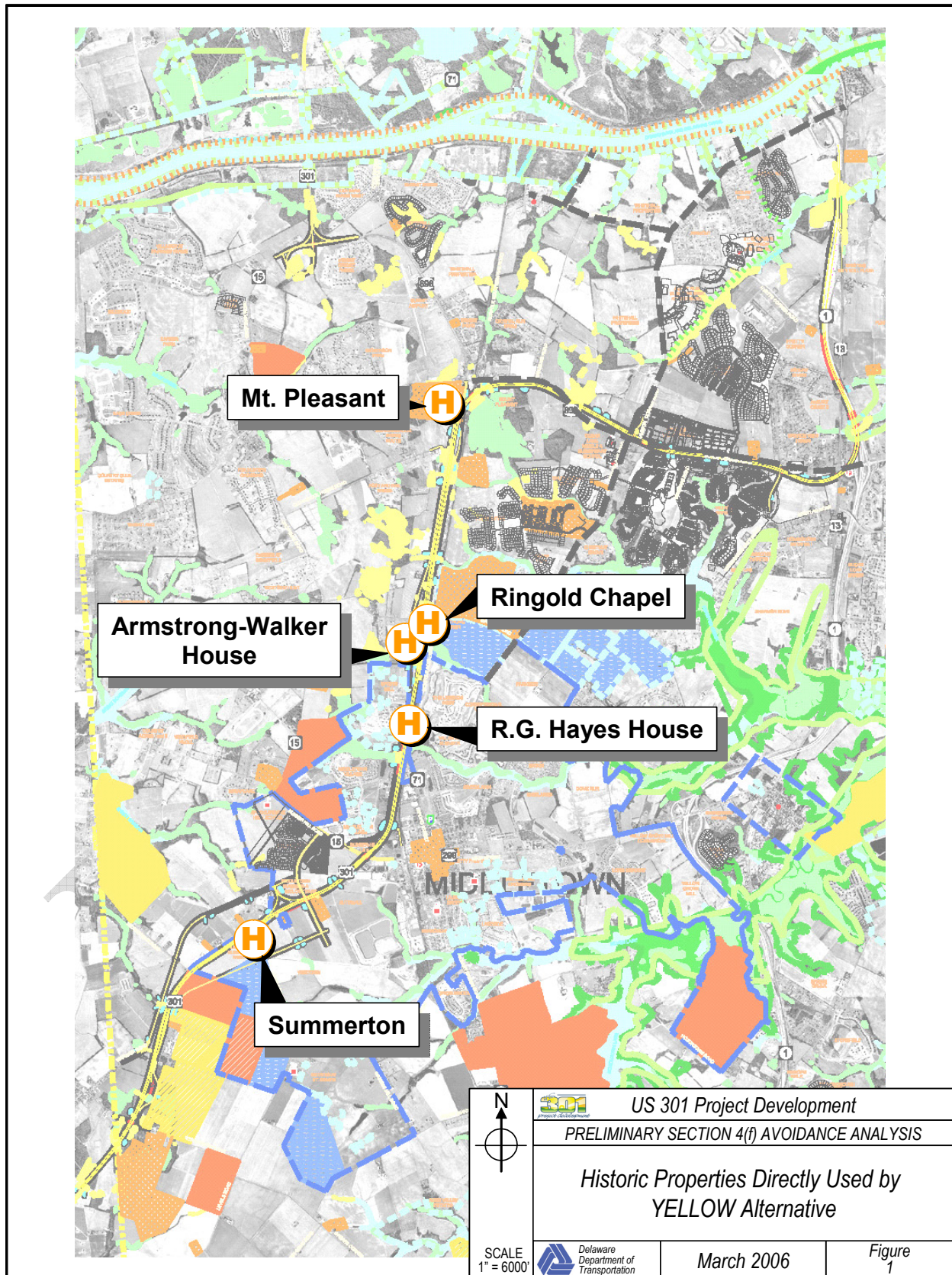
No publicly owned public parks, recreation areas, wildlife or waterfowl preserves would be directly impacted by the alternatives. However, six historic properties would be directly impacted by the alternatives.

For the purposes of this analysis, the NRHP boundaries were used to determine impacts. For the one property for which the NRHP boundaries have not yet been determined, the Ringold Chapel, the boundary considered is its current tax parcel, encompassing 0.5 acres.

The size of each historic property and the nature and size of the potential direct impacts are detailed in **Table 2**. The locations of the historic properties are illustrated in **Figure 1**.

Table 2 Section 4(f) Resources and Potential Direct Impacts

Name	CRS #	National Register Status	Property Size	YELLOW Alternative Direct Impacts
Ringold Chapel AME 5017 Summit Bridge Rd	A00031	DelDOT – Not Eligible SHPO – Eligible	0.5 acres (Proposed NRHP Boundary)	0.5 acres 100% of total property Demolition
Summerton; John Cochran House 840 Middletown Warwick Rd	N00112	Eligible	5.7 acres (NRHP Boundary)	2.9 acres 51% Demolition
Armstrong-Walker House; J. Cox Estate 5036 Summit Bridge Rd	N05146	Listed	5.0 acres (NRHP Boundary)	0.7 acres 13% Frontage
R.G. Hayes House 5187 Summit Bridge Rd	N05153	Eligible	0.4 acres (NRHP Boundary)	0.4 acres 100% Demolition
Mt. Pleasant Farm 4564 Summit Bridge Rd	N05242	Eligible	95.2 acres (NRHP Boundary)	Yes



III. Avoidance and Minimization Analysis

A. Total Avoidance Alternatives

The analysis of total avoidance alternatives is based on designs available as of February 2006 and assumes that all of the potential historic properties currently in Section 106 consultation are NRHP eligible with boundaries equivalent to their current tax parcels. Because consultation with the SHPO and the preliminary design of the alternatives are on-going activities, the analysis presented here may need to be re-evaluated at some point in the future.

Of the current Alternatives Retained for Detailed Evaluation, the No-Build Alternative would completely avoid all Section 4(f) resources. Congestion in the project area would continue to worsen under the No-Build Alternative because it does not add needed capacity. Therefore, the No-Build Alternative would not meet the project's purpose and need of improving congestion, providing increased safety, and handling through traffic, especially truck traffic. Because the No-Build Alternative does not meet the purpose and need for the project, it is not considered a prudent and feasible alternative under Section 4(f) guidance, and, therefore, it need not be considered further in this Section 4(f) avoidance analysis.

In addition to the No-Build Alternative, the Purple+Spur, Brown, and Green+Spur Alternatives do not directly impact any Section 4(f) resources. These alternatives are prudent and feasible alternatives under Section 4(f) guidance that do not use Section 4(f) resources. Therefore, at this time, these alternatives are total avoidance alternatives.

B. General Avoidance and Minimization Measures

Engineering elements were considered and employed wherever possible to avoid and minimize direct impacts to all environmental, cultural and socio-economic resources, including Section 4(f) properties. Mainline and ramp minimization efforts generally have taken two forms. First, the proposed side slopes from the edge of shoulder assume a lower ratio in lieu of a flatter slope, such as 6:1 or 4:1. The second minimization effort involved placing retaining walls at the edge of shoulder in areas where a graded 2:1 slope would result in impacts to resources. In many cases, these efforts have avoided impacts altogether.

Stormwater management facilities were designed based on topography and existing concentrated drainage pathways where existing runoff leaves the proposed right-of-way (study points). All facilities are designed to treat both water quantity and water quality. All facilities are designed with a 25-foot buffer (35 feet in residential and commercial areas) surrounding the facility footprint. All potential facilities were located so as to minimize impacts to sensitive areas, including wetlands and waterways, parks, historic properties, floodplains and significant trees, as well as utilities and residential and commercial structures. As design progresses, some of the stormwater management facilities may be redesigned as linear ditch-type facilities that would require a lesser footprint.

The proposed right-of-way (ROW) line for each of the alternatives, or limit of disturbance (LOD), has been determined to be 25 to 30 feet from the proposed limit of grading or at the feet

of proposed retaining walls. At this stage of planning, the Section 4(f) uses described for the following resources assume that all impacts within the proposed ROW/LOD will be permanent; however, it is anticipated that if a build alternative is chosen as the Selected Alternative, many of the impacts that lie between the limit of grading and the proposed ROW/LOD could be avoided or minimized during later stages of planning.

C. Avoidance Analysis for Groups of Resources

Review of **Figure 1** indicates that several historic properties directly impacted by the Yellow Alternative are located in proximity of one another, such that the potential to avoid the group of resources was appropriate to evaluate. One such group of resources is located along existing US 301 southwest of Middletown and includes Summerton (N00112). The other group of resources is located along existing US 301 north of Middletown and south of Armstrong Corner/Marl Pit Road and includes the R.G. Hayes House (N05153), Armstrong-Walker House (N05146), and Ringold Chapel (A00031).

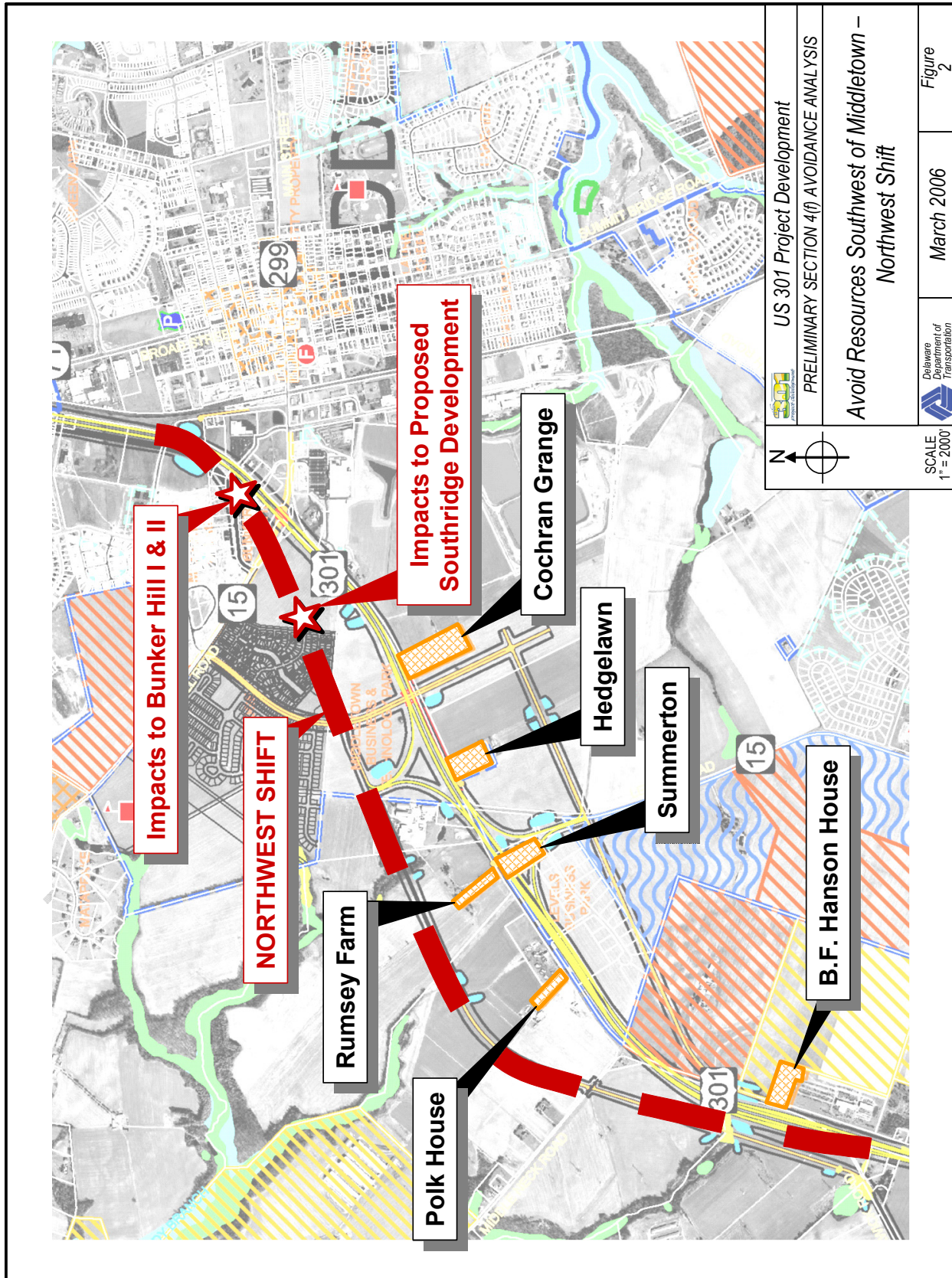
1. Avoidance of Resources Southwest of Middletown

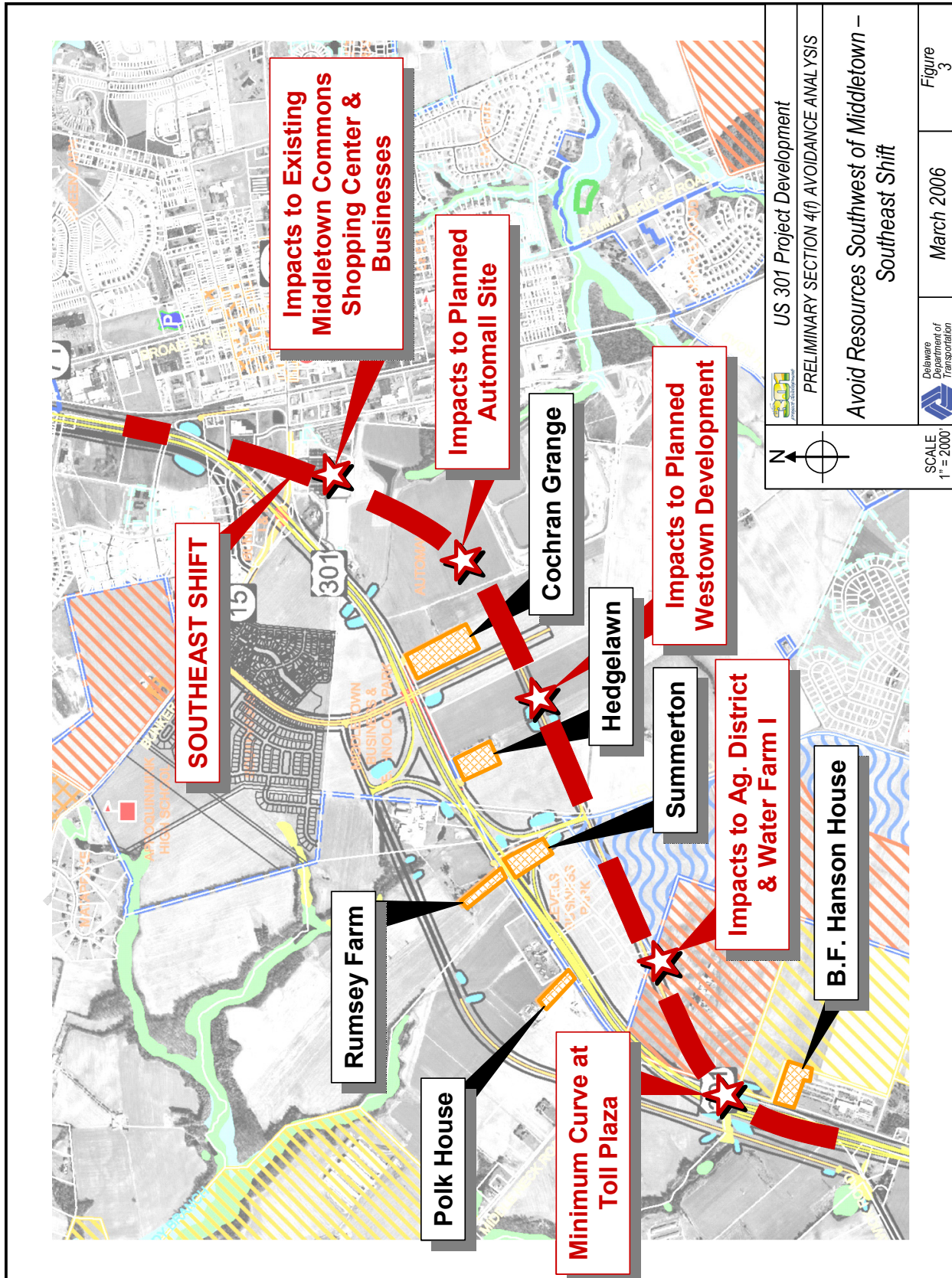
In order to avoid a resources located southwest of Middletown on existing US 301 – Summerton (N00112) along with neighboring Polk House (N06221), Rumsey Farm (N00113), Hedgelawn (N00118), and Cochran Grange (N00117) – an avoidance alignment for the Yellow Alternative was developed northwest of the existing US 301. Illustrated in **Figure 2**, this Northwest Shift would begin near the Delaware-Maryland state line and progress like the Purple+Spur, Brown and Green+Spur Alternatives (Ridge Alignment).

The Northwest Shift would provide a full directional interchange with an extended Levels Road. It then returns to the existing US 301 alignment by passing south of the Appoquinimink High School site and through the proposed Southridge and the existing Bunker Hill I & II development.

The Northwest Shift modification to the Yellow Alternative would avoid the direct impacts to Summerton. Further, it would not add any new direct impacts to Section 4(f) properties of any type. However, it would have significant direct impacts to the planned Southridge and existing Bunker Hill I & II development. According to Section 4(f) guidance, these adverse socio-economic impacts are unacceptable and severe. As a result, this avoidance modification to the Yellow Alternative is not a prudent and feasible alternative for the US 301 project.

A second avoidance alignment for the Yellow Alternative was developed southeast of the existing US 301. Illustrated in **Figure 3**, this Southeast Shift would curve to the east at the proposed Toll Plaza location, passing through an agricultural district and New Castle County's Water Farm I. It would then pass through the planned Westown development including the site of the planned Automall. The Southeast Shift would then curve to the north, passing through the existing Wal-Mart, Middletown Commons Shopping Center, and the adjacent restaurant and convenience businesses.





This avoidance modification to the Yellow Alternative would avoid the direct impacts to Summerton. Further, it would not add any new direct impact to Section 4(f) properties of any type. However, it would have significant direct impacts to an agricultural district, the planned Westown development, and the existing businesses in and adjacent to the Middletown Commons Shopping Center. The Southeast Shift would also impact Water Farm I, and reduction in the capacity of the facility would reduce the County's ability to address current and planned wastewater disposal needs. According to Section 4(f) guidance, these adverse socio-economic impacts are unacceptable and severe. As a result, this avoidance modification to the Yellow Alternative is not a prudent and feasible alternative for the US 301 project.

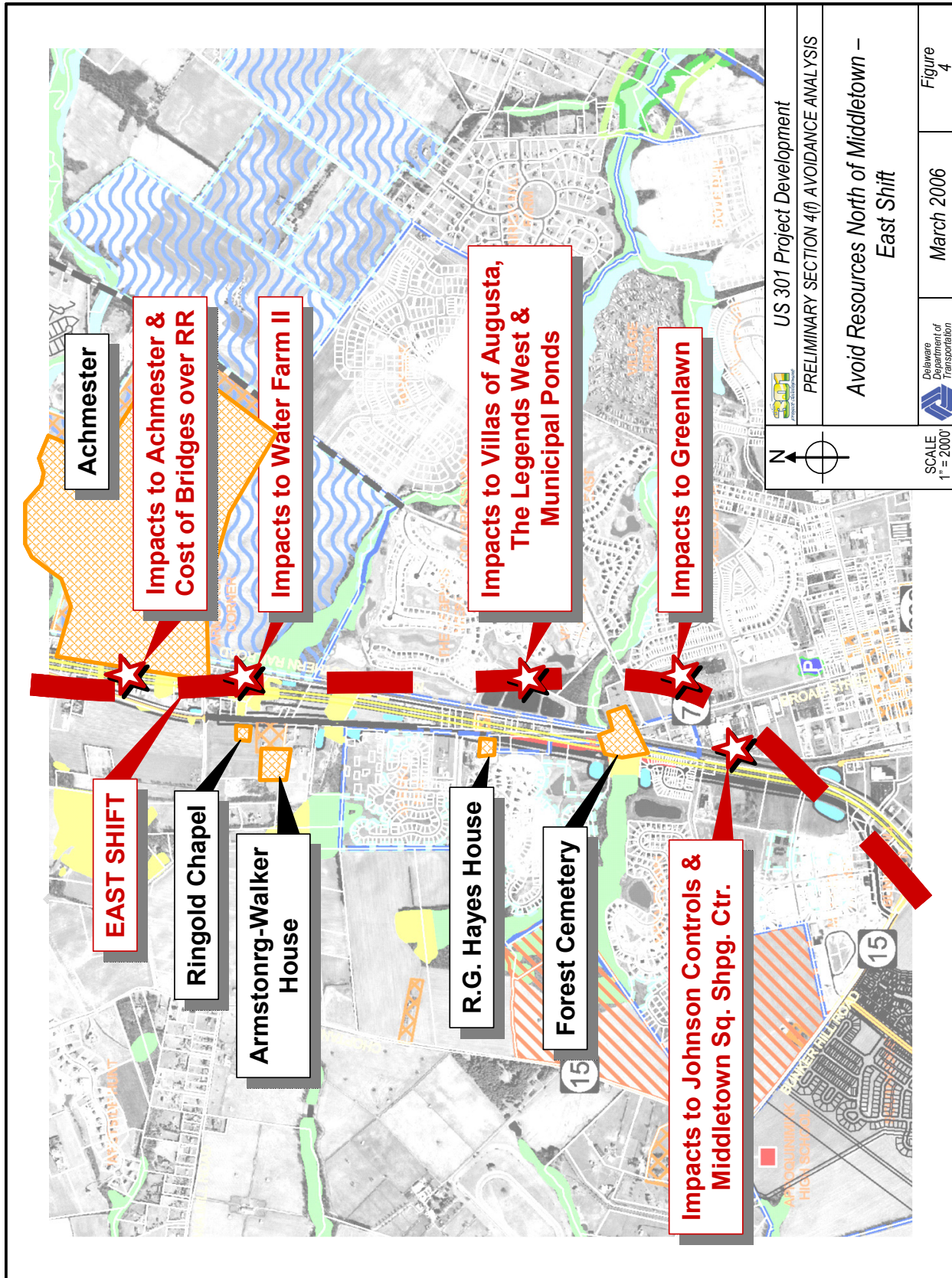
2. Avoidance of Resources North of Middletown

In order to avoid the resources located north of Middletown on existing US 301 – R.G. Hayes House (N05153), Armstrong-Walker House (N05146), and Ringold Chapel (A00031) – a second avoidance alignment for the Yellow Alternative was developed east of the existing US 301. Illustrated in **Figure 4**, this East Shift would deviate from the existing US 301 north of the intersection with Bunker Hill Road/Main Street, proceed to the east, cross over the existing railroad, pass south of the Forest Cemetery (A00019) directly impacting the Middletown Square Shopping Center and other light industrial properties along Broad Street, pass through the existing communities of Greenlawn, Villas of Augusta, and The Legends West, pass through New Castle County's Water Farm II and NRHP listed Achmester (N03930) before passing over the existing railroad and returning to the existing US 301 alignment north of Marl Pit Road. This avoidance modification could be implemented alone or in concert with the modification to avoid resources southwest of Middletown (see above).

This East Shift would avoid direct impacts to R.G. Hayes House, Armstrong-Walker House, and Ringold Chapel. However, it would add a new direct impact to Achmester, another historic property and Section 4(f) property. This new direct impact would affect the western edge of the property and would not require the destruction of any buildings, structures or known archeological sites. The landscape of this property, however, is considered a qualifying characteristic of this property such that use of the western edge of the property could be considered a significant adverse affect on the resource.

Along with the added Section 4(f) direct impact, this avoidance modification poses significant socio-economic and community impacts. The impacts to the Johnson Controls property, other light industrial properties on Broad Street, and Middletown Square Shopping Center would directly affect the employment and retail sectors of the local economy. In addition, the cost to relocate these businesses, particularly light industrial activities which are generally difficult to relocate, would be significant.

This East Shift also proposes significant impacts to the communities of Greenlawn, Villas of Augusta, and The Legends West. The design would require the relocation of over 100 households. As a comparison, the entire Yellow Alternative without this modification would require the relocation of 323 residences, such that this modification would increase by one-third the number of residential relocations for the Yellow Alternative as a whole.



Further considerations regarding this modification are the costs and potential community impacts associated with the two elevated crossings of the existing railroad. The structures needed could add to the cost of the Yellow Alternative while also adding noise and visual impacts to the surrounding homes, businesses and historic properties, including the Forest Cemetery and Achmester.

The last consideration regarding this modification is the direct impact to New Castle County's Water Farm II. This officially permitted wastewater disposal facility has been planned in order to address the recent significant residential development in the local area. Reduction in the capacity of the facility would reduce the County's ability to address current and planned wastewater disposal needs.

The East Shift modification to the Yellow Alternative benefits the historic properties, R.G. Hayes House, Armstrong-Walker House, and Ringold Chapel, but at the expense of another historic property (Achmester) and other significant local socio-economic resources (the commercial/light industrial properties Broad Street; Middletown Square Shopping Center; the communities of Greenlawn, Villas of Augusta, and The Legends West; and Water Farm II). According to Section 4(f) guidance, these are an accumulation of adverse socio-economic impacts that are unacceptable and severe, would cause extraordinary community disruption, and represent an accumulation of factors that collectively reach an extraordinary magnitude. As a result, this avoidance modification to the Yellow Alternative is not a prudent and feasible alternative for the US 301 project.

D. Specific Avoidance and Minimization Measures for Individual Resources

Efforts were made to avoid impacts to individual resources impacted by the Yellow Alternative. Where impacts were not avoidable, measures to minimize harm have been considered.

N00112 – Summerton

Summerton would be impacted by mainline and ramp construction of the mainline and access ramps for the Yellow Alternative. The alternative would require use of 51% of the property including demolition of its character-defining features.

Careful consideration of the location for the interchange of US 301 with Levels Road was given during the planning process. The designers considered not only Summerton's eligibility and boundary but also the presence of a number of other historic properties in the immediate vicinity. C. Polk House Estate (N05221), Rumsey Farm (N00113), and Cochran Grange Tenant House (A00229) are located northwest of US 301, with Rumsey Farm immediately across from Summerton. In addition, B.F. Hanson House (N05225), Hedgelawn (N00118), and Cochran Grange (N00117) are located on the southeast side of US 301 with Summerton. Summerton and Hedgelawn are only 1,200 feet apart.

Given the constraints of the location, a shift of the north-serving local access ramps to the northeast was evaluated. The shift is illustrated in **Figure 5**. This shift would minimize the direct impact to Summerton, but directly impact the planned Westown development, particularly the site of the proposed Automall.

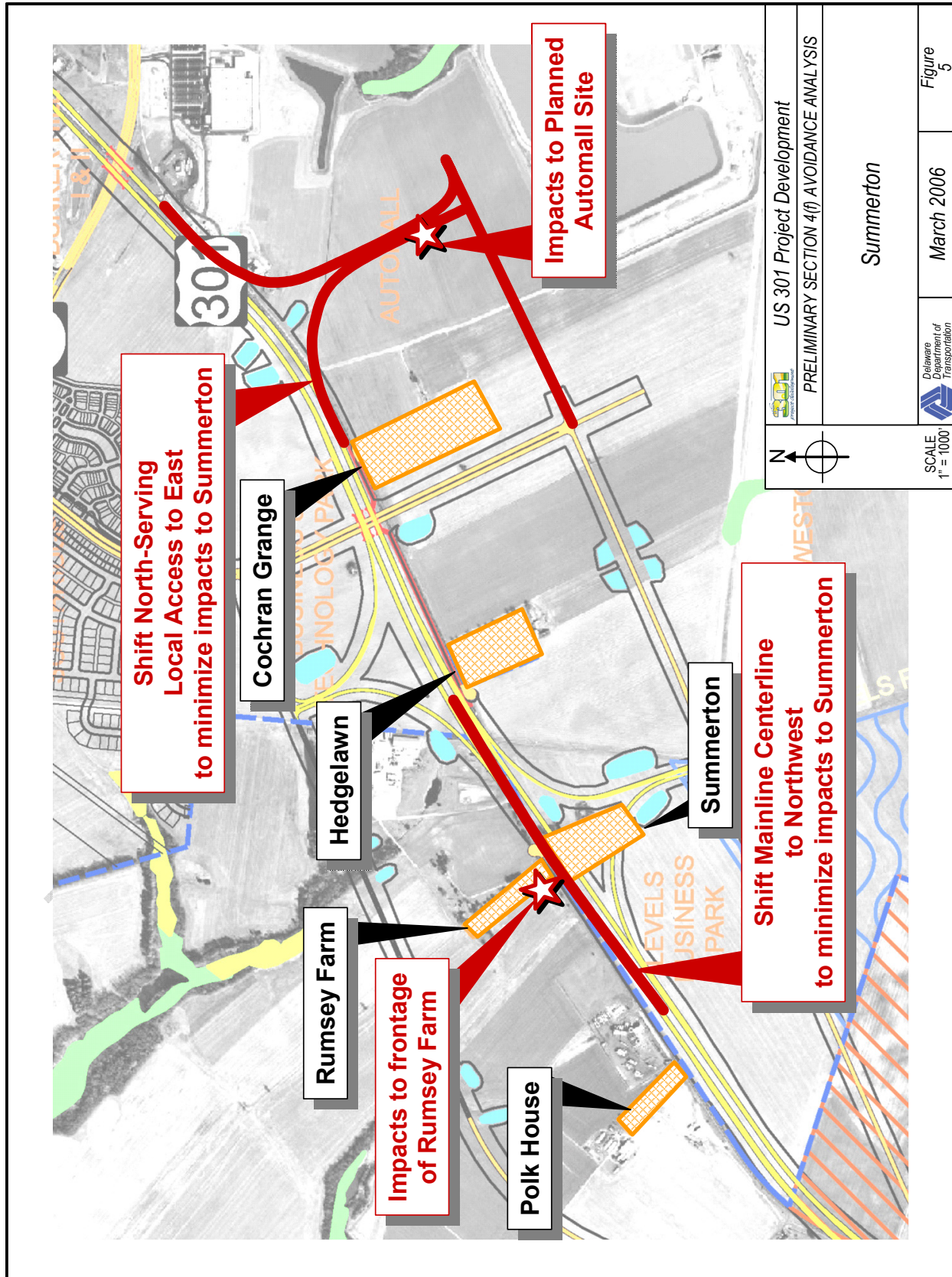
To further minimize the impacts to Summerton, the mainline could be shifted slightly to the northwest such that the centerline of the new roadway would follow the current centerline of existing US 301. This shift would minimize the impact to Summerton, potentially allowing for the significant residential and agricultural buildings and structures, the character-defining features of the historic property, to remain on the property. However, this shift would add a direct impact to the Rumsey Farm along its frontage with existing US 301, but would allow the buildings and structures, the character-defining features of the historic property, to remain. These two modifications – shift of the local access ramps to the northeast and shift of the mainline to the northwest – would minimize the direct impacts to Summerton such that it could be considered *no adverse effect* and potentially a *de minimis* use of the historic property. However, these modifications would add a direct impact to the Rumsey Farm, but those impacts also may be considered *no adverse effect* and potentially a *de minimis* use of the historic property. In comparing these two modifications, with two potentially *de minimis* uses of historic properties, with the Yellow Alternative, requiring the demolition of on historic property, in accordance with Section 4(f) guidance the two modifications are a “least harm” alternative over the Yellow Alternative. As a result, incorporating these modifications in the design of the Yellow Alternative should be considered.

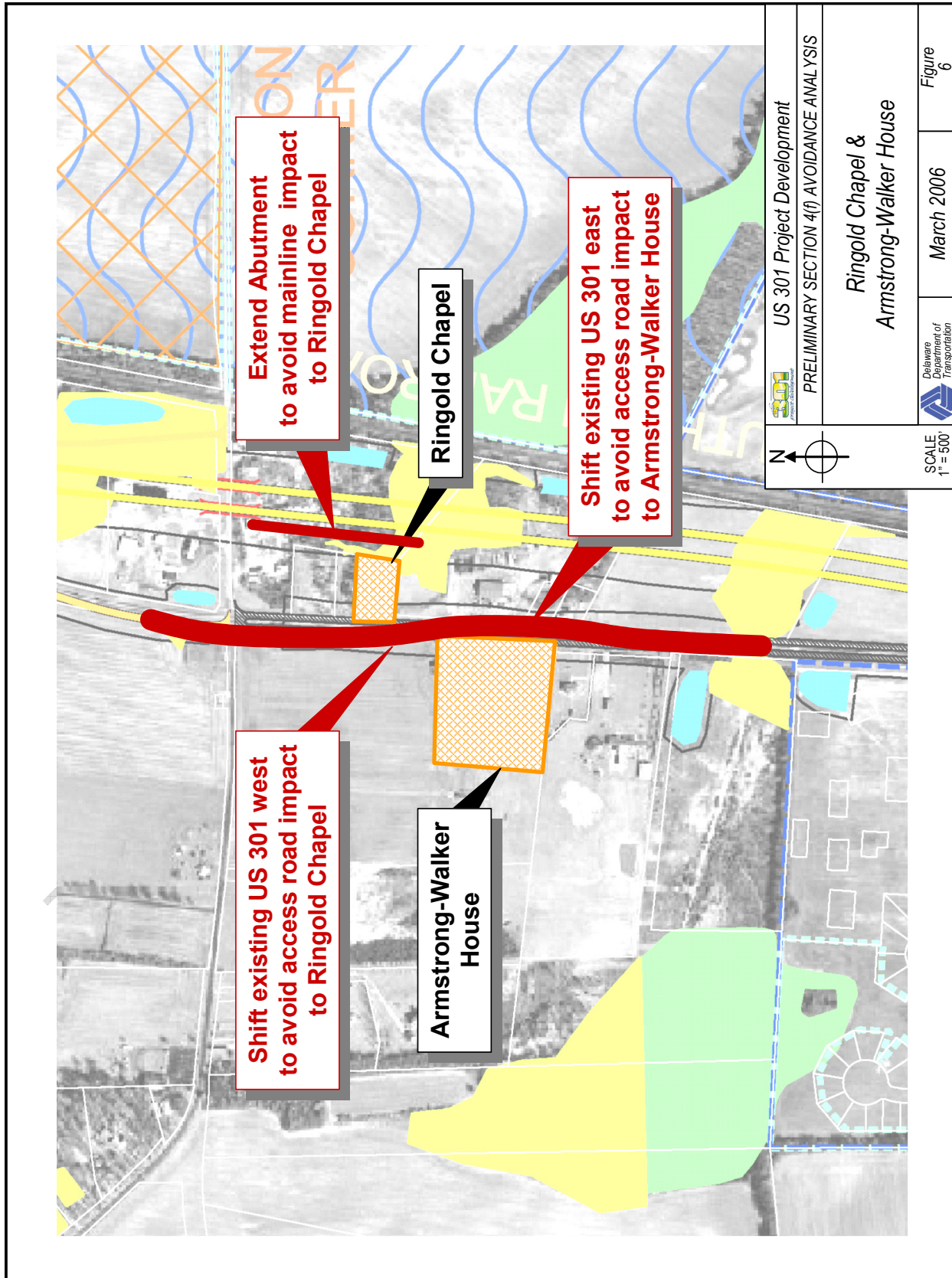
A00031 – Ringold Chapel AME

The Ringold Chapel – if determined eligible and if the boundary is considered to be its tax parcel (1301700017) – would be impacted by the mainline roadway and local access road (existing US 301) construction of the Yellow Alternative along both the front and rear of the existing property. The direct impacts to the property will 100% use of the property and necessitate the relocation of the Church congregation and the abandonment, if not demolition, of the historic resource (**Figure 6**).

In order to avoid the mainline impacts to the Ringold Chapel, the west abutment of the mainline bridge over Marl Pit Road could be extended 2500 feet to the south and act as a retaining wall. This would reduce the limits of construction and the right of way necessary for the mainline as it approaches the bridge span on an elevated grade. This modification would add costs to the Yellow Alternative.

In order to avoid the local access road (existing US 301) impacts to the Ringold Chapel, the road alignment could be shifted to the west. This shift is complicated by the location of the Armstrong-Walker House, across US 301 from the Ringold Chapel. However, a gentle “S” curve could be added to the existing US 301 alignment such that both historic properties could be avoided. While such an “S” curve is not desirable in existing US 301 given its current traffic volumes, level of service, and importance in the roadway network, in the Yellow Alternative scenario such a curve would not impair the usage or safety of the local access road.





These two modifications – extend the west abutment of the bridge over Marl Pit Road on the mainline and shift the local access road (US 301) to the west – are prudent and feasible alternatives that avoid direct use of the Ringold Chapel. As a result, incorporating these modifications in the design of the Yellow Alternative should be considered.

N05146 – Armstrong-Walker House

Construction of the Yellow Alternative would use a small area (0.7 acres) along the existing US 301 frontage of the Armstrong-Walker House to construct the frontage roads (along the existing US 301 alignment) for the new US 301 alignment (**Figure 6**). The use of this area would not require the removal of any of the character-defining features of the property. As a result, this direct impact could be considered to have *no adverse effect* on the historic property under Section 106.

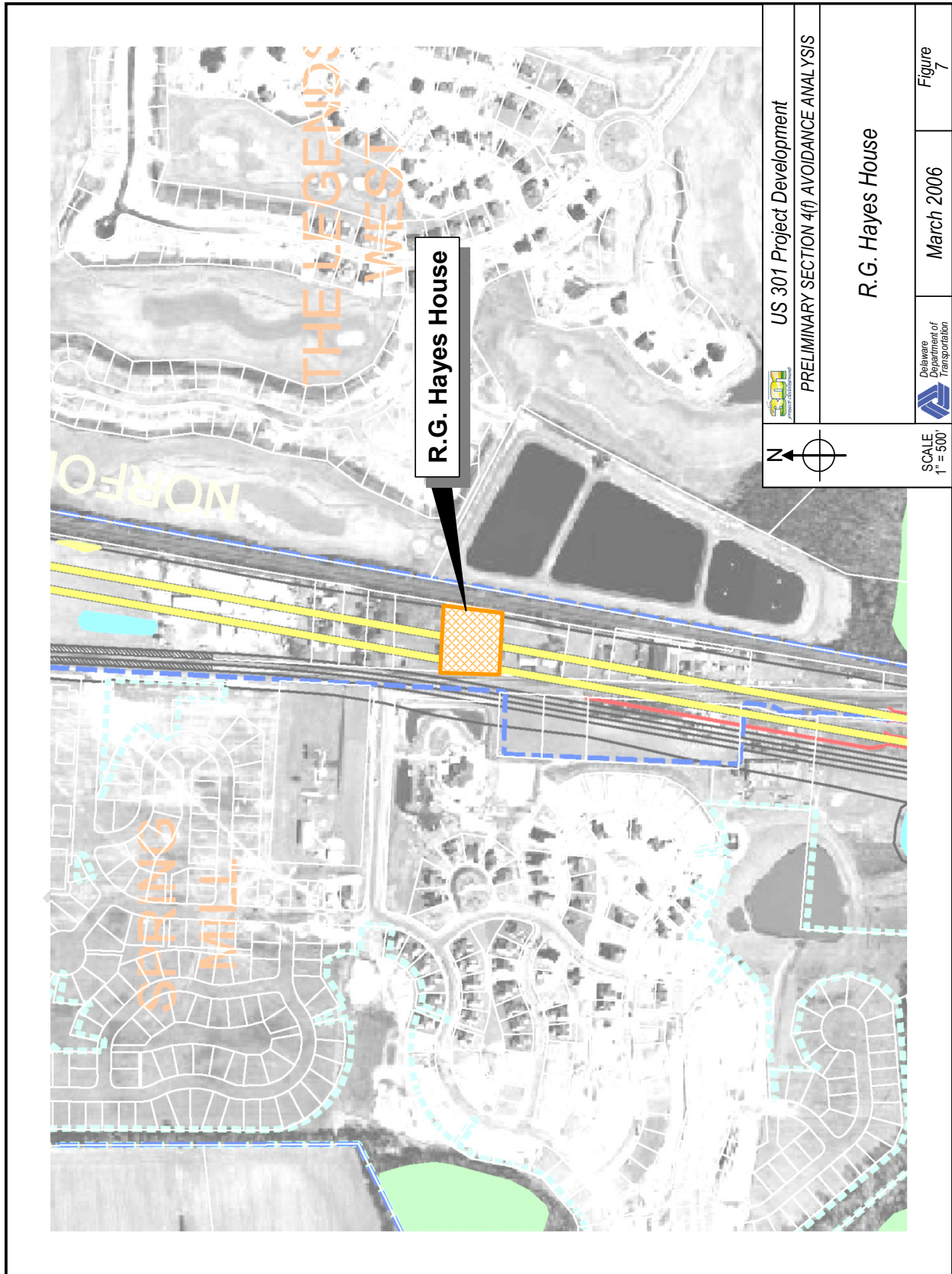
As discussed above, in order to avoid the local access road (existing US 301) impacts to the Armstrong-Walker House, the road alignment could be shifted to the east. This shift is complicated by the location of the Ringold Chapel, across US 301 from the Armstrong-Walker House. However, a gentle “S” curve could be added to the existing US 301 alignment such that both historic properties could be avoided.

While such an “S” curve is not desirable in existing US 301 given its current traffic volumes, level of service, and importance in the roadway network, in the Yellow Alternative scenario such a curve would not impair the usage or safety of the local access road. This shift to the east is a prudent and feasible alternative that avoids direct use of the Armstrong-Walker House. As a result, incorporating these modifications in the design of the Yellow Alternative should be considered.

N05153 – R. G. Hayes House

The R.G. Hayes House would be impacted by construction of the Yellow Alternative new mainline roadway, proposed to be located between existing US 301 and the Norfolk-Southern Railroad alignment. Construction would require demolition of the house and other structures, the defining features of the property, and use the entire property (**Figure 7**).

In order to avoid the use of this resource, alternative alignments to the west and east were evaluated. To the east, the roadway would have to be elevated to clear the Norfolk-Southern Railroad, causing additional impacts to the Dove Nest Branch, Middletown municipal water treatment ponds, and residences in The Legends West community. The additional costs of the bridge structure over the railroad, the potential impacts to the water treatment facility, and the additional residential relocations are an accumulation of factors that collectively reach extraordinary magnitude when compared to the demolition of the R.G. Hayes House.



Avoidance of the R.G. Hayes House to the west would impact additional residences in the Springmill Community and public open space. Under the Section 4(f) guidance, the loss of the R.G. Hayes House, albeit a severe harm, does not outweigh the harm of unacceptable and severe harm to the community. As a result, avoidance modification to the Yellow Alternative is not a least harm alternative for the US 301 project, and the direct use of the R.G. Hayes is considered “unavoidable” for the purposes of this analysis.

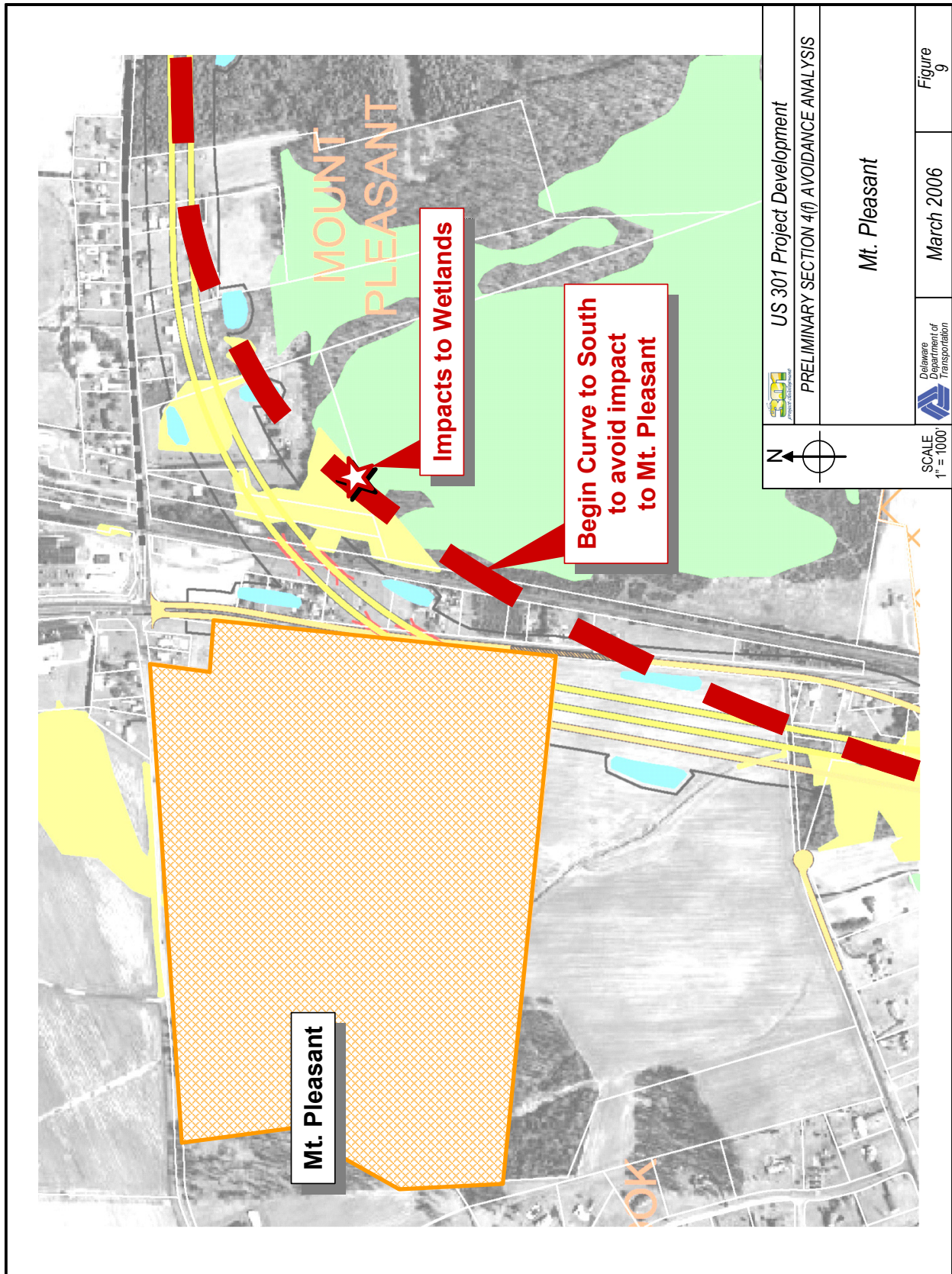
N05242 – Mt. Pleasant Farm

Construction of the Yellow Alternative would require the use of a small area (8.4 acres/9% of the property) along the existing US 301 frontage of the Mount Pleasant Farm property to construct the frontage roads for the new US 301 alignment (**Figure 9**). The character-defining features of the property, its buildings and structures, would remain. As a result, this impact could be considered *no adverse effect* on the historic property under Section 106.

The direct impacts of the Yellow Alternative occur as the mainline alignment changes from its northerly direction along existing US 301 to an easterly direction along Boyds Corner Road. In order to ensure a safe curve, the alignment design follows design guidelines for a 65 mph curve. The alignment veers slightly to the west, and into the historic property, to elongate the curve length.

In order to avoid the potentially *de minimis* use of the historic property, the alignment could be modified such that it would begin its curve to the east at a more southern location, but still north of Weston (N00121), another historic property located west of the railroad and south of Boyds Corner Road. Such a shift would increase the wetland impacts of the Yellow Alternative by approximately 30 acres. Considering that the entire Yellow Alternative without this shift would impact 51.6 acres of wetlands, this avoidance modification would increase these impacts by 50%. Under Section 4(f) guidance, these increased wetland impacts are unacceptable and severe when compared to the potential *de minimis* use of the historic property such that this avoidance shift is not a prudent and feasible alternative for the US 301 project.

Further, because wetlands are the habitat for the federally threatened Bog Turtle, this modification has the potential to impact Bog Turtles. However, the potential impact to Bog Turtles cannot be assessed until the Phase II Survey to identify the presence or absence of Bog Turtles in the project area is completed (scheduled for Summer 2006). If this modification were to impact Bog Turtles, that would further support the conclusion that the impacts of this modification are unacceptable and severe when compared to the potential *de minimis* use of the historic property such that this avoidance shift is not a prudent and feasible alternative for the US 301 project.



IV. Summary of Findings and Recommendations

The analysis of avoidance and minimization of potential Section 4(f) direct uses of known and potential Section 4(f) resources has indicated that the Purple+Spur, Brown, and Green+Spur Alternatives are prudent and feasible alternatives that clearly have no potential Section 4(f) direct uses. Therefore, based on current design, information and analyses, any of these alternatives could be approved by FHWA under Section 4(f) regulations and guidance.

This analysis has also demonstrated that the Yellow Alternative would directly use six historic properties, which are detailed in **Table 3**.

Table 3 Summary Analysis of Section 4(f) Uses of Historic Properties by the Yellow Alternative

Name	CRS #	National Register Status	Avoidance/Minimization Analysis	Severity of Use after Minimization
Ringold Chapel AME 5017 Summit Bridge Rd	A00031	DelDOT – Not Eligible SHPO – Eligible	Consider extending abutment & shift of local access road to avoid/minimize use	Potentially avoided or minimized to <i>de minimis</i> use
Summerton; John Cochran House 840 Middletown Warwick Rd	N00112	Eligible	Consider shift of local access ramps and shift of mainline to avoid/minimize use	Potentially minimized to <i>de minimis</i> use
Rumsey Farm 841 Middletown Warwick Rd	N00113	Listed	Consider shift of mainline to avoid/minimize use of Summerton	Potential <i>de minimis</i> use
Armstrong-Walker House; J. Cox Estate 5036 Summit Bridge Rd	N05146	Listed	Consider shift of local access road to avoid/minimize use	Potentially avoided or minimized to <i>de minimis</i> use
R.G. Hayes House 5187 Summit Bridge Rd	N05153	Eligible	Unavoidable direct use	Demolition of character-defining features
Mt. Pleasant Farm 4564 Summit Bridge Rd	N05242	Eligible	Unavoidable direct use	Potential <i>de minimis</i> use

Of these, the analysis has shown that it is not prudent and feasible to avoid the direct uses of the R.G. Hayes House and Mt. Pleasant Farm. The direct uses of the other historic properties may be avoided or minimized through prudent and feasible modifications to the Yellow Alternative. Even if the avoidance and minimization modifications are made to the Yellow Alternative, it is unlikely that the Yellow Alternative could be approved by FHWA under Section 4(f) regulations and guidance because it would directly use known Section 4(f) resources and there are prudent and feasible alternatives –the Purple+Spur, Brown, and Green+Spur Alternatives – that completely avoid the direct use of Section 4(f) properties.

However, consultation among FHWA, DelDOT, and SHPO regarding the eligibility and boundaries of historic resources is on-going. Once the complete list of historic properties listed

and eligible for the National Register is agreed upon, the potential for direct uses by the alternatives should be reviewed. In addition, once complete data regarding the socio-economic and natural environmental resources of the project area is available, especially data regarding the presence or absence of bog turtles, proposed avoidance and minimization measures should be re-evaluated for their prudence and feasibility. Modifications currently considered “prudent and feasible” based on available data, may not be considered “prudent and feasible” if they impact confirmed locations of bog turtles. After this re-evaluation, the Yellow Alternative (and any other alternative with direct uses of Section 4(f) resources) may be modified to include any prudent and feasible avoidance and minimization measures.

If FHWA and DelDOT indicate a preference for an alternative that uses – directly, constructively, or by temporary occupancy – a Section 4(f) resource, then a complete Section 4(f) Evaluation should be prepared addressing the regulatory and guidance issues including the analysis of prudent and feasible alternatives, analysis of avoidance and minimization, and, if necessary, a least harm analysis. On the other hand, if FHWA and DelDOT select an alternative that does not use Section 4(f) resources, then brief documentation of the lack of Section 4(f) uses should be prepared.

DRAFT